



OPERATING AND SERVICE MANUAL

MODEL

700A

PART NO.

1001061-502

SERIAL NO.

4664

AR AMPLIFIER RESEARCH

SOUDERTON, PA. 18964

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MODEL 700A

CAUTION NOTE:

IMPROVED PERFORMANCE CAN BE OBTAINED IF THE AMPLIFIER OUTPUT IMPEDANCE TAP IS SELECTED TO MINIMIZE REFLECTED POWER AS INDICATED ON THE PANEL METER. NORMALLY THIS WILL MATCH THE OUTPUT IMPEDANCE AND THE AMPLIFIER WILL RUN COOLER AND PROVIDE MORE OUTPUT VOLTAGE FOR THE SAME AMOUNT OF DRIVE.

DO NOT SWITCH THE IMPEDANCE TAP WITH POWER APPLIED TO THE LOAD. REMOVE DRIVE TO THE AMPLIFIER BEFORE SWITCHING.

ENGINEERING DEPARTMENT
AMPLIFIER RESEARCH

SECTION I

GENERAL INFORMATION

1.1 General Description

The Model 700A Power Amplifier is a self-contained high power unit designed primarily for severe industrial applications.

The Model 700A Amplifier is completely solid state. It is protected against damage which might be caused by excessive VSWR, high instantaneous line voltage, excessive output power or over-temperature operation. A built-in time delay and zero-crossing turn-on reduce current inrush to prolong component life. Power supply regulation is used to remove noise and output fluctuations. A directional wattmeter and front panel selector switch provide convenient measurement of forward power from the amplifier and reverse power reflected by the load. Cooling is provided by self-contained fans. All sub-assemblies are plug-in for easy maintenance and repair.

1.2 POWER SUPPLIES

This unit has a self-contained 115 VAC, 50/60 Hz regulated power supply. The power consumption is a nominal 1500 watts @ 700 watts output. Primary fusing is provided. Delayed zero-crossing turn on circuitry is used to avoid high in-rush currents.

1.3 SPECIFICATIONS

Refer to Amplifier Research Data Sheet on next page for detailed specifications.



ULTRASONIC POWER AMPLIFIER
700 WATTS, 10-250 KHz
MODEL 700A

The Model 700A Power Amplifier is completely solid state and contains no mechanical circuit breakers or relays. Even its over-temperature sensor is a solid state device. Designed for severe industrial applications, the Model 700A Amplifier is protected from damage which might be caused by excessive VSWR, high instantaneous line current, excessive output power or over-temperature operation. A built-in time delay and zero-crossing turn-on reduce current inrush to prolong component life. Power Supply voltage regulation is used to remove noise and output fluctuations. A directional wattmeter and front panel selector switch provide convenient measurement of the forward power from the amplifier and reverse power reflected by the load. A non-linear meter scale allows extremely sensitive tuning of the load simply by adjusting for minimum reflected power.

The Model 700A cooling is provided by self-contained fans. Air is drawn in through filtered inlets to protect the circuitry from exposure to excessively dirty environments which may be encountered in industrial applications. All sub-assemblies are plug-in and can be readily removed for maintenance and repair.

The Model 700A may be purchased initially for low power requirements and when additional power is required another Model 700A and a hybrid power combiner may be used to provide performance equivalent to our Model 1400A.

The Model 700A is complete with a built-in 115 VAC power supply, regulators, power meter and protection circuitry. It is normally supplied in a handsome bench top cabinet with rack mounting available as an option.

SECTION II

OPERATING INSTRUCTIONS

2.1 GENERAL

Operation of the Model 700A Power Amplifier is simple and straight forward. The input signal is fed to the jack marked INPUT and the amplifier output is taken from the jack marked OUTPUT. Both input and output jacks are standard type BNC. The unit is turned on by activating the power switch marked OFF, ON. In the event of a malfunction protection is provided by internal shutdown circuits, and also by fusing located at the rear of the unit. A polarized three (3) wire AC power cord is also included with the unit to provide cabinet and chassis grounding to the power mains. A front panel power meter calibrated in watts is provided to enable the operator to measure the power actually delivered to the load. A switch is included to enable the selection of either forward or reflected power. A front panel attenuator control sets the output level.

CAUTION

THE MODEL 700A AMPLIFIER IS NOT CRITICAL IN REGARDS TO SOURCE AND LOAD VSWR AND WILL REMAIN UNCONDITIONALLY STABLE WITH ANY MAGNITUDE AND PHASE OF SOURCE AND LOAD VSWR. IT ALSO HAS BEEN DESIGNED TO WITHSTAND, WITHOUT DAMAGE, RF INPUT POWER UP TO TWENTY (20) TIMES ITS RATE OF INPUT OF 1 mW. HOWEVER, SIGNAL LEVELS HIGHER THAN 20 mW OR TRANSIENTS WITH HIGH PEAK VOLTAGES CAN DAMAGE THE AMPLIFIER. ALSO, ACCIDENTAL CONNECTION OF THE 700A OUTPUT TO THE INPUT CAUSES OSCILLATIONS WHICH WILL PERMANENTLY DAMAGE THE INPUT TRANSISTOR.

2.2 AMPLIFIER OPERATION

Figure 2.1 shows the Model 700A Amplifier in pictorial form.

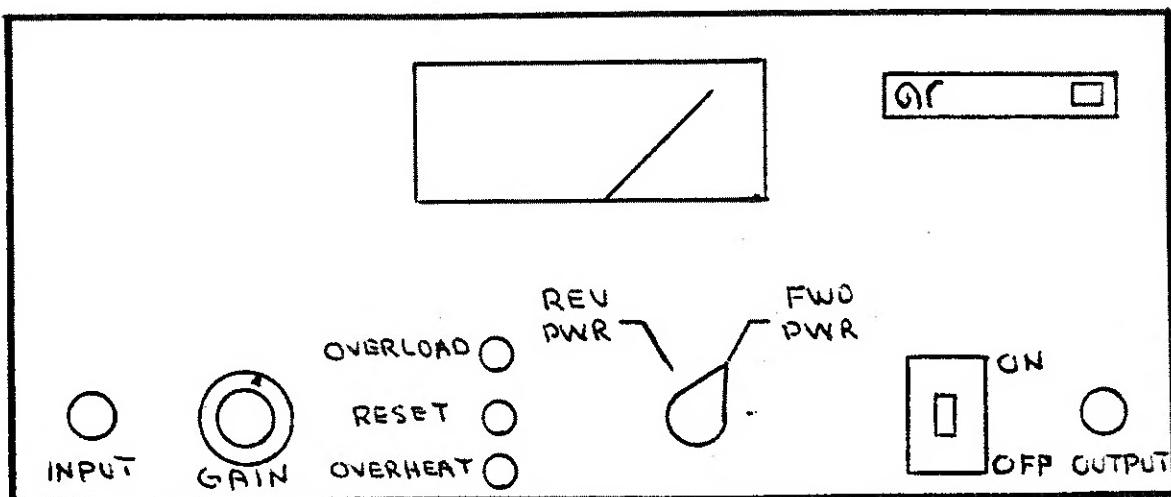


Figure 2.1
Amplifier Operation

Turn On Sequence:

1. Connect input signal to INPUT connector.
2. Connect load to OUTPUT connector.
3. Set GAIN control fully counter clockwise.
4. Activate power switch to ON position. A red indicator light mounted within the switch will light when power is applied.
5. Monitor output power (FWD) and adjust gain for desired level.

SECTION III

THEORY OF OPERATION

3.1 INTRODUCTION

Refer to Block Diagram on the following page. The Model 700A incorporates a low level section which consists of an integrated circuit pre-amplifier followed by a gain control and a single transistor stage which in turn drives a push-pull stage.

The output of the low level stage is fed to a four way power splitter. The four identical outputs of the power splitter are fed to 2 pairs of push-pull stages. The outputs of these stages are combined in the final combiner and routed to the output connector.

Input and output matching networks are utilized to provide optimum power transfer to and from the amplifier with a 50 ohm source and load impedance respectively. Interstage coupling is accomplished by using broadband ferrite transformers that provide the essential overall flat frequency response.

The self-contained power supply employs a full-wave rectifier, transistor error sensing amplifier and series pass transistors to provide regulated output voltages. It also utilizes delayed, zero-crossing turn on to avoid high inrush currents.

3.1 INTRODUCTION (continued)

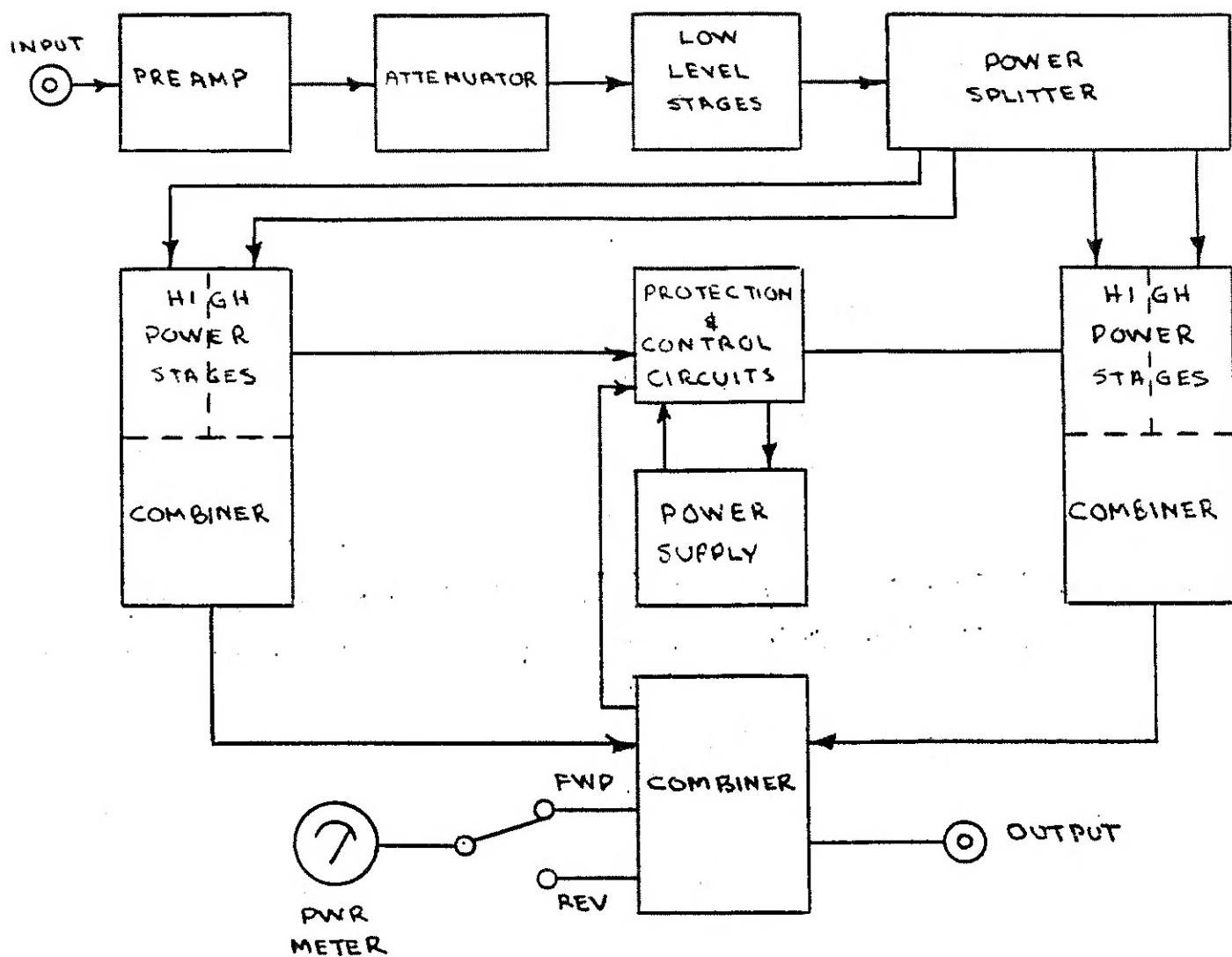


FIGURE 3.1
BLOCK DIAGRAM
MODEL 700A

3.2 AMPLIFIER SECTION

Refer to Schematic Diagram Nos. 1001059, 1000837, 10D1054, 1000845.

The input signal is fed from the front panel input connector to the integrated circuit pre-amp A2U1. The output of A2U1 is fed to emitter follower A2Q2 which provides the power and impedance transformation to drive the front panel gain control and the low level stages. The low level amplifier stages (Schematic 1000837) consists of Q1 which is fed through impedance matching transformer T1. The output of Q1 drives the push-pull amplifier stage consisting of T2, Q2, Q3, and T3.

The signal is then fed to the four way splitter consisting of T5, T6, and T7. This provides four identical output signals.

The four identical signals are then fed to two pairs of push-pull amplifier stages (Schematic 1001054). The inputs are transformer coupled to Q1, Q2, and Q3, Q4. Feedback is provided by RC networks from collector to base. Forward bias is provided by two resistors and a diode. This is used to lower crossover distortion. The outputs of each pair are combined in T5. The two outputs are then combined again in the final combiner (Schematic 1000845). This final combining takes place in T1 and T2. This combined signal then goes to the output connector. Integral to the final combiner is a detector circuit which is designed to produce DC voltages proportional to the forward and reflected power. These voltages are selected by the front panel switch and displayed as forward or reverse power (watts) on the power meter. This circuit also supplies forward and reverse overpower shutdown signals to the protective circuitry. The amplifier for the power meter (U2) is located on the turn on circuit board (A2).

3.3 TURN ON AND PROTECTIVE LOGIC CIRCUITRY

Refer to Schematic No. 1001050 and 1001052.

When the power ON switch is activated, +Vcc is applied to the logic circuitry. A2C11 charges through A2R8 until the voltage on A2C11 exceeds the zener voltage on A2VR1 at which time A2Q4 turns on. This provides a signal to the primary AC relay located on the power supply sub-assembly which in turn applies AC power to the high voltage power supply. The time constant of A2R8 and A2R11 provides a delayed turn on which prevents high inrush currents.

3.3 TURN ON AND PROTECTIVE LOGIC CIRCUITY (Continued)

In case of an excess of reflected power, a signal is sent from the final combiner sub-assembly to A1Q3 of the protective circuit sub-assembly. The conduction of A1Q3 turns on A1Q7 which turns on A1Q6. A1Q7 and A1Q6 then act as a latch, remaining in the on condition until reset by the front panel "reset" control. A1Q6 applies a signal to A2Q1 turning off the signal emitter follower A2Q2, and to A2Q3 which turns off A2Q4 removing the turn on signal to the high voltage supply, shutting off the high voltages to the power amplifier stages. The overload indicator lamp is also turned on. Forward power shutdown operation and overcurrent shutdown operation are similar. The forward power shutdown signal originates in the final combiner. The overcurrent shutdown signal originates in U1 of the power supply.

There are temperature sensors located on the power supply sub-assembly and the two final amplifier assemblies. In case of an over-temperature condition a signal is set to A1U1 turning one of the transistors on. Any one of these transistors turning on will turn on A1Q2 which then turns on A1Q1. A1Q1 and A1Q2 again act as a latch, remaining on until reset by the front panel "reset" control. The over temperature lamp is also turned on. A1Q1 again applies a signal to A2Q2 and A2Q3 which operate the same as above. There is also a cover interlock, which prevents turning on the unit with the cover off. The cover interlock signal is supplied from A1R19 through A1Q2 directly to the shutdown circuit.

3.4 POWER SUPPLY

Refer to Schematic Diagrams 1001059 and 1000833.

When the power on switch is activated, 115 VAC power is applied to the low voltage supply (VR1) which supplies the turn on and protective circuitry. It is also applied, at a reduced level through R10 to the bridge rectifier CR1. After the time delay has expired, a signal is sent to K1, a zero-crossing turn on relay, applying full power to CR1. The rectifier current is filtered by C1, then passes through the current limiting resistors, Q3 through Q8, and then to the output. The voltage drop across R2 and R3 is sensed by U1 through R4, R5, and VR4. The trip point of U1 is set by adjusting R5 to turn on X1 with the desired current flowing through R2 and R3. Q1 and VR1 sense any changes in the output. If the voltage increases Q1 turns on harder decreasing the bias to Q2. This lowers the current through the series pass transistors, lowering the output voltage to its original level.

3.4 POWER SUPPLY (Continued)

A decrease in output voltage has the opposite effect, thus regulating the output to the voltage set by R12. This voltage (140V) supplies the final amplifier.

Zener diodes are used to drop the 140 volt supply to 60 volts which is used in the driver amplifier.

SECTION IV

MAINTENANCE

4.1 GENERAL MAINTENANCE INFORMATION

The Model 700A should require little maintenance. It is built with etched circuit wiring and solid state devices which should ensure long, trouble-free life. In addition it contains circuitry to protect it against excess forward or reflected power, overcurrent, and over-temperature conditions.

However, should trouble occur special care must be taken in servicing, to avoid damage to the devices or the etched circuit boards.

Since the components are soldered in place, substitution of components should not be resorted to unless there is some indication that they are faulty. In addition, take care when troubleshooting not to short voltages across the amplifier. Small bias changes may ruin the amplifier due to excessive dissipation or transients.

Components within the Amplifier Research instruments are conservatively operated to provide maximum instrument reliability. In spite of this, parts within an instrument may fail. Usually, the instrument must be immediately repaired with a minimum of "down time". A systematic approach can greatly simplify and thereby speed up the repair.

However, due to the importance of the amplifier's alignment, it is recommended that when failure is caused by breakdown of any of the components in the signal circuits, the amplifier be returned to the factory for part replacement and amplifier realignment. Shipping instructions are as follows: ship PREPAID via United Parcel Service to Amplifier Research Corporation, 160 School House Road, Souderton, PA 18964.

4.2 COVER AND SUB-ASSEMBLY REMOVAL

To remove the top cover take out the screws located in the top and rear flange of the cover. Lift rear of cover and slide out from under front panel flange.

4.2 COVER AND SUB-ASSEMBLY REMOVAL (Continued)

To remove the Amplifier and power supply sub-assemblies disconnect all connectors and remove the 6 mounting screws for each assembly from the bottom of the unit.

Logic cards can be removed by taking out the mounting screws located in the upper corners of the card and gently pulling the cards from their connectors.

CAUTION: When removing mounting screws do not drop the card separating spacers into the unit.

4.3 AIR FILTER SERVICE

Both outer side panels should be removed periodically and the air filters located behind them cleaned or replaced periodically.

CAUTION: Failure to properly service air filters can cause overheating and shorten life of the Amplifier.

4.4 TROUBLESHOOTING

A good way to start troubleshooting is to check the supply voltages. First check for +12V at A1VR1. If it is low or missing, check the line fuse, VR1 and associated circuitry on the A2 board. If it is present next check for 140 volts on the regulated power supply module. If it is missing check for a turn-on signal at K1-3. If the signal is missing check through the logic circuitry, also checking that none of the protective shutdown conditions exist, and that the cover interlock switch is energized or bypassed. If the turn on signal is present check the power supply from CR1 through to the output.

If all the voltages are present, apply a signal to the input and attempt to trace it through the signal path until it disappears. Then check the individual components in that stage.

4.5 SERVICING ETCHED CIRCUIT BOARDS

When soldering leads, use a hot forty (40) watt or smaller iron. Apply heat sparingly to the leads, not to the printed wiring on the board. Before installing new parts clean holes to receive new part without forcing. Have new leads tinned to receive solder quickly with a minimum of heat and without residue.

SECTION V

REPLACEABLE PARTS

5.1 INTRODUCTION

This section contains information to ordering replacement parts. The following parts list show the parts in alphanumeric order of their reference designators and indicate the description; end, together with any applicable notes, provide the following:

- a. Description of the part.
- b. Manufacturer's part number.
- c. Typical manufacturer of the part.

Miscellaneous parts are listed at the end of the parts list.

5.2 ORDERING INFORMATION

To obtain replacement parts, address order to Amplifier Research, 160 School House Road, Souderton, PA 18964. Identify and include instrument model and serial numbers.

5.3 NONLISTED PARTS

To obtain a part that is not listed, include:

- a. Instrument model number.
- b. Instrument serial number.
- c. Description of the part.
- d. Function and location of the part.

5.4 REFERENCE DESIGNATIONS

A = assembly
B = fan
BT = battery
C = capacitor
CB = circuit breaker
CR = diode
DS = lamp
E = terminal
F = fuse
IC = integrated circuit
J = jack
K = relay
L = inductor
M = meter
P = plug
Q = transistor, semiconductor
R = resistor, potentiometer
RT = temperature sensing element
S = switch
T = transformer
TB = terminal block
TP = test point
U = integrated circuit
V = vacuum tube, neon bulb, photocell, etc.
VR = zener diode
W = wire, cable
X = socket

5.5 PARTS LISTS

See the following sheets for Parts Lists.

ML 1001061- 502

MODEL 700A

DESCRIPTIVE INFORMATION	SUPPORT DOCUMENTS
FREQUENCY 10-250 KHZ	TEST DATA SHEET 1001044
POWER OUT 700W LINEAR	TEST PROCEDURE 1001903
PRIMARY POWER 115 VAC	ENVELOPE DWG
COOLING INTERNAL FANS	SALES DATA SHEET INFORMAL
PACKAGE 17" LAB 7" PANEL	MANUAL CLASS I (SEE REVERSE SIDE)
OPTIONS INCLUDED	REMARKS

- FORM 109 REV0378



AMPLIFIER RESEARCH

DATE	R	DATE	R
28 Mar 78	-	8 JUN 79	B
26 Dec 78	A		

MASTER LIST

MODEL 796 FREO CONN, 700A

AMPLIFIER RESEARCH

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**AMPLIFIER
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QUANTITY REQUIRED	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
1	R15	TYPE BWH	RES, FXD, WW	0.27Ω	3W		
1	R14		RES, FXD, COMP	1.0K	5%	1/4W	
1	R13	4658	RES, FXD, WW	15K	.5W	OHMITE	
1	R12	U201R101B	RES, VAR	1.0K		1/4W	
1	R11		RES, FXD, COMP	6.8K	5%	1/4W	
-	R10	NOT USED					
-	R9	4642	RES, FXD, WW	5K	5W	OHMITE	
-	R8		RES, FXD, COMP	1.0K	5%	2W	
-	R7	NOT USED					
-	R6	NOT USED					
1	R5	U201R101B	RES, VAR	100 Ω		1/4W CTS	
1	R4		RES, FXD, COMP	22Ω	5%	1/4W	
1	R3	1802A	RES, FXD, WW	1.0Ω		20W OHMITE	
1	R2	1802A	RES, FXD, WW	1.0Ω		20W OHMITE	
	-	R1	-	-	-	-	
500	508	507	ITEM OR SYMBOL	DATE APPROVED E.E.	DATE APPROVED M.E.	ORIGINATOR (U) Rother	DATE 2.5 Mar 76
500	508	506	PART NO.				
500	507	505					
500	506	504					
500	505	503					
500	504	502					
500	503	501					

**AMPLIFIER
Research**

CAC

APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR (U) Rother	DATE 2.5 Mar 76
TITLE REGULATOR ASSY			DWG. NO. 2-1000834		
			SHEET 3 OF REV C		
			HIPS		

MESSENGER
AMPLIFIER



ECN

		A	12	R 76
		B	26	JUL 76
		C	12	NOV 76
	D	9	SEP	77
	E	3	MAR	78
	F	18	APR	78
	G	29	AUG	78
	H	8	JUN	79
571	J	1	JUN	83

SCHEMATIC

REF. REF. 1000B33

MODEL 700A,850,851
MODEL 764,796

QUANTITY REQUIRED

ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR	DATE
APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR DW ROTW	DATE	DWG. NO. PL1000835	DATE 25 MAR 76
TITLE HVPS ASSY.			SHEET 1 OF 3 REV J				
508	507	506	505	504	503	502	501

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QUANTITY REQUIRED

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MODEL 700A
MODEL 850,851
MODEL 796 FRE CONV

QUANTITY REQUIRED

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QUANTITY REQUIRED							SPECIFICATION OR VENDOR
	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	
508	507	506	505	504	503	502	501
C13	NOT USED						
C12	DD601	CAP, FWD, CERAMIC	600PF	1KV	CENTRALAB		
C11	C281AB / AIM	CAP, FWD, MYLAR	1.0uF	250V	MEPCO-ELECTRA		
C10	C281AB / AIM	CAP, FWD, MYLAR	1.0uF	250V	MEPCO-ELECTRA		
C9	NOT USED						
C8	19C253(125LD20)	CAP, FWD, CERAMIC	.001uF	1KV	SPRAGUE		
C7	VP12BY333K	CAP, FWD CER	.033uF	1KV	VITRAMON		
C6	19C253(125LD20)	CAP, FWD, CERAMIC	.002uF	1KV	SPRAGUE		
C5	C281AB/A120K	CAP, FWD, MYLAR	0.12uF	250V			
C4	C281AB / AIM	CAP, FWD, MYLAR	1.0uF	250V			
C3	TVA-1437	CAP, FWD, ELEC	4.0uF	200V			
C2	TVA-1437	CAP, FWD, ELEC	4.0uF	200V			
C1	NOT USED						
509	508	507	506	505	504	503	502

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PC BOARD

1000801-101

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			QUANTITY REQUIRED	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
-	-	1	1	T7	1000643-626	FERRITE CORE				
-	-	1	1	T6	1000643-626	FERRITE CORE				
-	-	1	1	T5	1000643-626	FERRITE CORE				
			14	NOT USED						
-	-	1	1	T3	1000643-625	FERRITE CORE				
-	-	1	1	T2	1000643-625	FERRITE CORE				
-	-	1	1	T1	1000643-626	FERRITE CORE				

APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR	DURRTH	DATE
RF BOARD ASSY				PL1000838		25 May 76

TITLE RF BOARD ASSY
SHEET 3 OF REV D
DWG. NO. PL1000838
LOW LEVEL

amplifier
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AMPLIFIER RESEARCH

3

ORIGINATOR	YII Path	DATE	25 Mar 76
OWG. NO.	PL 1000	838	
SHEET	4	OF	REV D

QUANTITY REQUIRED	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR	
							509	508
1	R21		RES, FXD, COMP	470Ω	5%	2W		
1	R20		RES, FXD, COMP	4.7K	5%	1/4W		
1	R19		RES, FXD, COMP	33Ω	5%	2W		
1	R18		RES, FXD, COMP	24Ω	5%	2W		
1	R17		RES, FXD, COMP	24Ω	5%	2W		
1	R16		RES, FXD, COMP	12Ω	5%	2W		

AMPLIFIER
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REF	REF	REF	SCHEMATIC	A	12	76
			B	26 JUN 76		
			C	12 NOV 76		
			D	29 MAR 77		
			E	8 SEP 77		
			F	5 MAY 78		
			G	29 AUG 78		
			H	22 JUN 81		

058,700A, MODEL 796

MODEL 796

OMIT FROM MANUAL

4 F
3 G
2 H
1 H

SHEET REV

ITEM
PART NO:
SYMBOL

VALUE TOL RATING

SPECIFICATION
OR
VENDOR

APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR D.W. Reck	DATE
TITLE POWER COMB & DIRECT LINEAR			DWG. NO. PL 1000852		
SHEET 1 OF 4			REV H		

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ITEM NO.	QTY	REF	DESCRIPTION	TYPE	VALUE	TOL	RATING	OR SYMBOL	PART NO.	QUANTITY REQUIRED	SPECIFICATION OR VENOOR								
1	1	P3	03-01-2151	SHELL, FEMALE	15 PIN				WALDOM										
7	8	P3	02-09-2118	PIN, MALE					WALDOM										
				CONN, COAX	MALE				GC ELECTRONICS										
	-	P2	33-772	CONN, COAX	MALE				GC ELECTRONICS										
	-	P1	33-772	CONN, COAX	MALE														
	-	L1	1000859-101	FORM, INDUCTOR					RR □										
	-	L2	02-3-623X1-11-26-1-1	INDUCTOR, TOROID					AR										
	-	L3	02-3-623X1-11-26-1-1	INDUCTOR, TOROID					AR										
	-	-	L2 .010X.100	STRAP															
	-	L3	.010X.100	STRAP															
	-	CRA	IN4448	DIODE															
	-	CR3	IN4448	DIODE															
	-	CR2	IN4448	DIODE															
	-	CR1	IN4448	DIODE															
	-	C7	811-0000XSR0472	CAP, FXD, CERAMIC	4700PF				500V ERIE										
	-	CC	811-0000XSR0472	CAP, FXD, CERAMIC	4700PF				500V ERIE										
	-	C5	5815000Y5U20A2	CAP, FXD, CERAMIC	0.2μF				25V ERIE										
	-	C4	5815000Y5U20A2	CAP, FXD, CERAMIC	0.2μF				25V ERIE										
	-	C3	5815000Y5U20A2	CAP, FXD, CERAMIC	0.2μF				25V ERIE										
	-	C2	5815-00YSYSU20A2	CAP, FXD, CERAMIC	0.2μF				25V ERIE										
	-	C1	811-0000XSR0472	CAP, FXD, CERAMIC	4700PF				500V ERIE										
509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	DESCRIPTION	PART NO.:								

QUANTITY BEFORE

**AMPLIFIER
RESEARCH**

APPROV
E.I.

M.E.

369

TITLE POWER COMB & DIRECTN- DETECTOR
OWG. NO. P-L101000832
SHEET 2 OF 4
REV H

ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
QUANTITY REQUIRED						
5						
4	3	4110x #6 x 1/4 SPACER (MTG L1)				
-	2					
	2					
-	1	1000858-101 PC BOARD				
	1					
-	1	R4	RES, FxD, COMP	51 Ω	5% 1/2W	
-	1	R3	RES, FxD, COMP	51 Ω	5% 1/2W	
	1					
1	1	T4 1000643-625 FERRITE CORE				
-	1	T3 1000643-625 FERRITE CORE				
-	1	T2 1000643-625 FERRITE CORE				
-	1	T1 1000643-625 FERRITE CORE				
	1					
-	1	R9 1802C	RES, FxD, WW	3 Ω	20W OHMITE	
-	1	R8	RES, FxD, COMP.	100Ω	5% 1/2W	
-	1	R7	RES, FxD, COMP	100Ω	5% 1/2W	
-	1	R6 U201R253B	RES, VAR	2.5K	5% 1/4W CTS	
-	1	R5 U201R253B	RES, VAR	2.5K	5% 1/4W CTS	
-	1	R4	RES, FxD, COMP	100Ω	5% 1/2W	
-	1	R3	RES, FxD, COMP	100Ω	5% 1/2W	
-	1	R2 1805	RES, FxD, WW	25 Ω	20W OHMITE	
-	1	R1 1805	RES, FxD, WW	25 Ω	20W OHMITE	
509	508	507	506	505	504	503
502	501					

APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR DRAFTED	DATE
TITLE POWER COMP & DIRECTNL DETECTOR			DWG. NO. PL1000852		
SHEET 3 OF 3			REV G		

amplifier research

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A

AMPLIFIER Research



APPROVED E.	DATE	APPROVED M.E.	DATE	ORIGINATOR	P.R.W.	DATE 19 Oct 77
TITLE	ATTENUATOR ASSY			OWG. NO.	PL1001042	
				SHEET	OF	REV A

AMPLIFIER RESEARCH

6

APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR	P.R.W.	DATE 16 Nov 77
TITLE LOGIC BOARD ASSY, A1				DWG. NO.	PL1001053	
				SHEET	2 OF	REV A

ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
508	506	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	
509	507	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	
510	505	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	
511	504	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	
512	503	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	
513	502	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	
514	501	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	
Q1	2N3904	TRANSISTOR	ANY	ANY	ANY	
Q2	2N3904	TRANSISTOR	ANY	ANY	ANY	
Q3	2N3904	TRANSISTOR	ANY	ANY	ANY	
Q4	2N3904	TRANSISTOR	ANY	ANY	ANY	
Q5	2N3904	TRANSISTOR	ANY	ANY	ANY	
Q6	2N3904	TRANSISTOR	ANY	ANY	ANY	
Q7	2N3906	TRANSISTOR	ANY	ANY	ANY	
R1	RC07	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	
R2	RC07	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	
R3	RC07	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	
R4	RC07	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	
R5	RC07	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY	

amplifier
research

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APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR P.R.W.	DATE 16 Nov 71
TITLE LOGIC BOARD ASSY, AI				DWG. NO. PL1001053	SHEET 3 OF REV -

QUANTITY REQUIRED	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENOR	ORIGINATOR P. R. W.	DATE / 6 Nov 77
509	508	507	506	505	504	503	502	501	R10 RC07
									RES, FXD, COMP
									3.3K
									5%
									1/4W
									ANY
									R11 RC07
									RES, FXD, COMP
									680Ω
									5%
									1/4W
									ANY
									R12 RC07
									RES, FXD, COMP
									1.0K
									5%
									1/4W
									ANY
									R13 RC07
									RES, FXD, COMP
									1.0K
									5%
									1/4W
									ANY
									R14 RC07
									RES, FXD, COMP
									1.0K
									5%
									1/4W
									ANY
									R15 RC07
									RES, FXD, COMP
									680Ω
									5%
									1/4W
									ANY
									R16 RC07
									RES, FXD, COMP
									3.3K
									5%
									1/4W
									ANY

**AMPLIFIER
Research**



OWG. NO. PL1001053
SHEET 4 OF REV -

APPROVED DATE APPROVED M.E.

TITLE LOGIC BOARD ASSY, A1

			ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	QUANTITY REQUIRED	SPECIFICATION OR VENOR
1	R33	RC07	RES, FXD, COMP	470Ω	5% $\frac{1}{4}$ W	ANY				
1	R32	RC07	RES, FXD, COMP	1.8K	5% $\frac{1}{4}$ W	ANY				
1	R31	RC07	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY				
1	R30	RC07	RES, FXD, COMP	470Ω	5% $\frac{1}{4}$ W	ANY				
1	R29	U201R503B	RES, VAR, COMP	50K	20% $\frac{1}{4}$ W	CTS				
1	R28	RC07	RES, FXD, COMP	4.7K	5% $\frac{1}{4}$ W	ANY				
1	R27	RC07	RES, FXD, COMP	10K	5% $\frac{1}{4}$ W	ANY				
1	R26	RC07	RES, FXD, COMP	470Ω	5% $\frac{1}{4}$ W	ANY				
1	R25	U201R503B	RES, VAR, COMP	50K	20% $\frac{1}{4}$ W	CTS				
1	R24	RC07	RES, FXD, COMP	2.2K	5% $\frac{1}{4}$ W	ANY				
1	R23	RC07	RES, FXD, COMP	3.3K	5% $\frac{1}{4}$ W	ANY				
1	R22	RC07	RES, FXD, COMP	1.0K	5% $\frac{1}{4}$ W	ANY				
1	R21	RC07	RES, FXD, COMP	680Ω	5% $\frac{1}{4}$ W	ANY				

amplifier research

AMPLIFIER RESEARCH

5

A 3 M. 78 REF REF - 1001050 A2

B 17 Apr 78
C 5 FEB 79
D 13 Nov 80

SCHEMATIC DIAGRAM

REF

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REF

17 Apr

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5 FEB

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13 Nov

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REV

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1001050

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SCHEMATIC

DIAGRAM

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			QUANTITY REQUIRED	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
-	-	C16			CAP, FXD, CERAMIC	47 PF				
-	-	C15	811-00025U0103M		CAP, FXD, CERAMIC	.01μF	500V	ERIE		
-	-	C14	TVA-1305.5		CAP, FXD, ELEC	20μF	50V	SPRAGUE		
-	-	C13	31D158G04OHPO		CAP, FXD, ELEC	1500μF	40V	SPRAGUE		
-	-	C12	811-00025U0103M		CAP, FXD, CERAMIC	.01μF	500V	ERIE		
-	-	C11	TVA-1310		CAP, FXD, ELEC	100μF	50V	SPRAGUE		
-	-	C10	811-00025U0103M		CAP, FXD, CERAMIC	.01μF	500V	ERIE		
-	-	C9	TVA-1305.5		CAP, FXD, ELEC	20μF	50V	SPRAGUE		
-	-	C8	NOT USED							
-	-	C7	NOT USED							
-	-	C6	TVA-1305.5		CAP, FXD, ELEC	20μF	50V	SPRAGUE		
-	-	C5	196D685X0035HAI		CAP, FXD, TANT	6.8μF	35V	SPRAGUE		
-	-	C4	5815-000Y5U104M		CAP, FXD, CERAMIC	0.1μF	25V	ERIE		
-	-	C3	FC 150		CAP, FXD, CERAMIC	15 PF		R		
-	-	C2	811-00025U0103M		CAP, FXD, CERAMIC	.01μF	500V	ERIE		
		-	-	-						
503	506	507	506	505	504	503	502	501		

**amplifier
research**

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APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR P.R.W.	DATE 22 Nov 77
TITLE LOGIC BOARD ASSY, A2			DWG. NO. PL1001056		
			SHEET 2 OF REV B		

amplifier research

APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR	P.R.W.	DATE 22 Nov 77
TITLE LOGIC BOARD ASSY, A2			OWG. NO. PL10001056			REV C
			SHEET 3 OF			

ITEM NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
509	508	507	506	505	504
503	502	501	ITEM OR SYMBOL	PART NO.	QANTITY REQUIRED
R22	RC07	RES, FXD, COMP	2.2 K	5% 1/2 W	ANY
R21	4549	RES, FXD, WW	5 Ω	5% 5W	
R20	RN60D2742F	RES, FXD, FILM	27.4K	5% 1/4 W	ANY
R19	RC42	RES, FXD, COMP	560 Ω	5% 2W	ANY
R18	1805	RES, FXD, WW	25 Ω	20W OHMITE	
R17	RC07	RES, FXD, COMP	680Ω	5% 1/4 W	ANY
R16	RC07	RES, FXD, COMP	680Ω	5% 1/4 W	ANY
R15	RC32	RES, FXD, COMP	47Ω	5% 1W	ANY
R14	RC07	RES, FXD, COMP	12K	5% 1/4 W	ANY
R13	RC07	RES, FXD, COMP	680Ω	5% 1/4 W	ANY
R12	RC07	RES, FXD, COMP	10K	5% 1/4 W	ANY
R11	RC07	RES, FXD, COMP	51Ω	5% 1/2 W	ANY
R10	RC07	RES, FXD, COMP	100 Ω	5% 1/4 W	ANY
R9	RC07	RES, FXD, COMP	100 Ω	5% 1/4 W	ANY
R8	RC07	RES, FXD, COMP	10K	5% 1/4 W	ANY
R7	RC07	RES, FXD, COMP	2.7Ω	5% 1/4 W	ANY
R6	RC07	RES, FXD, COMP	8.2K	5% 1/4 W	ANY

**AMPLIFIER
RESEARCH**

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ORIGINATOR	P.R.W.	DATE	22 Nov 77
OWG. NO.	PL1001056		
SHEET	4	OF	REV B

AMPLIFIER Research

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REF - 1001054 SCHEMATIC DIAGRAM A 3 278
 B 13 Nov 80
 C 4 FEB 82

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MODEL 700A

QUANTITY REQUIRED	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR	
							APPROVED E.E.	DATE M.E.
509	508	507	506	505	504	503	502	501

CIRCUIT RESEARCH

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AMPLIFIER
RESEARCH

E.E.
TITLE RF BOARD ASSY
FINAL AMP

PL1001058

SHEET 1 OF 7 REV C

DWG. NO. PL1001058

amplifier research

**amplifier
research**

	ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
QUANTITY REQUIRED							
-	R19	1808	RES, FxD, WW	100Ω	20W	OHMITE	
-	R18	NOT USED					
-	R17	NOT USED					
-	R16	4539	RES, FxD, WW	2.4Ω	5W	OHMITE	
-	R15	4539	RES, FxD, WW	2.4Ω	5W	OHMITE	
-	R14	4531	RES, FxD, WW	2.4Ω	5W	OHMITE	
-	R13	4531	RES, FxD, WW	2.4Ω	5W	OHMITE	
-	R12	1532	RES, FxD, WW	1.0K	8W	OHMITE	
-	R11	4651	RES, FxD, WW	8.2K	5W	OHMITE	
-	R10	4651	RES, FxD, WW	8.2K	5W	OHMITE	
-	R9	1532	RES, FxD, WW	1.0K	8W	OHMITE	
-	R8	1532	RES, FxD, WW	1.0K	8W	OHMITE	
-	R7	NOT USED					
-	R6	NOT USED					

**AMPLIFIER
RESEARCH**



APPROVED	DATE	APPROVED M.E.	DATE	ORIGINATOR	P.R. W.	DATE	23 Nov. 7
E.E.						DWG. NO.	PL1001058
TITLE	RF BOARD ASSY					SHEET	4 OF REV A

RF BOARD ASSY							FINAL AMPLIFIER							
ITEM	QUANTITY REQUIRED	PART NO.	DESCRIPTION	VALUE	TOL	RATING	SPECIFICATION OR VENDOR	APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR P.R.W.	DATE 23 Nov 77	
												DWG. NO. PL1001058	SHEET 5 OF	REV -
509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL					
ZIERICK			CLIP, FUSE											
ZIERICK			CLIP, FUSE											
2	XF2	798												
2	XFI	798												
-	T5	1000643-625	CORE, FERRITE											
-	T4	1000643-625	CORE, FERRITE											
-	T3	1000643-625	CORE, FERRITE											
-	T2	1000643-626	CORE, FERRITE											
-	T1	1000643-626	CORE, FERRITE											
509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL					

**AMPLIFIER
RESEARCH**

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AMPLIFIER passageway



MODEL 700A OBSOLETE

MODEL 700AM3

MODEL 700A

MODEL 700AM6

QUANTITY REQUIRED

ITEM OR SYMBOL	PART NO.	DESCRIPTION	VALUE	TOL	RATING				
509	508	507	506	505	504	503	502	501	500

**amplifier
research**

REF REF	-	1001059	INTERCONNECTION DING	D	20 OCT 78
-	REF	-	INTERCONNECTION DING	E	6 JUN 79
				F	13 Nov 80
				G	19 JUN 81

Not Part Of Manual

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SHEET REV

SPECIFICATION
OR
VENDOR

DATE 23 Nov 71

APPROVED DATE APPROVED DATE
E.E. M.E. P.R.W. P.R.W.
TITLE Housing G' INTERFACE ASSY DWG. NO. PL1001060
SHEET / OF 6 REV G

**AMPLIFIER
RESEARCH**

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APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR	P.R.V.	DATE 23 Nov 77
TITLE HOUSING & INTERFACE ASSY				DWG. NO. PL10001060		
				SHEET	2 OF	REV D

					DESCRIPTION	ITEM OR SYMBOL	PART NO.	QUANTITY REQUIRED
-	-	-	J10	UG-568/U	CONNECTOR, COAX	C	ANY	4
-	-	1	J10	UG-625B/U	CONNECTOR, COAX	BNC	ANY	
-	1	-	J10	UG-2628U	CONNECTOR, COAX	BNC	ANY	
-	1	-	J9	KC-19-288	CONNECTOR, COAX	BNC	KINGS	
-	1	-	J9	UG625 B/U	CONNECTOR, COAX	BNC	ANY	
-	-	-	J8	NOT USED				
-	-	-	J7	NOT USED				
-	-	-	J6	NOT USED				
2	2	2	8	02 - 09 - 2118	PIN, MALE		WALDOM	
8	8	2		02 - 09 - 1118	PIN, FEMALE		WALDOM	
1	1	1		03 - 09 - 1151	SHELL, FEMALE		WALDOM	
2	2	2	11	02 - 09 - 2118	PIN, MALE		WALDOM	
11	11	2		02 - 09 - 1118	PIN, FEMALE		WALDOM	
1	1	1		03 - 09 - 1151	SHELL, FEMALE		WALDOM	
2	2	2	9	02 - 09 - 2118	PIN, MALE		WALDOM	
9	9	9		02 - 09 - 1118	PIN, FEMALE		WALDOM	
1	1	1		03 - 09 - 1151	SHELL, FEMALE		WALDOM	
1	1	1	J2	143-036-01	CONNECTOR, PC		AMPHENOL	
1	1	1	J1	143-036-01	CONNECTOR, PC		AMPHENOL	
508	508	507	506	505	504	503	502	501

amplifier research

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APPROVED
E.F. TITLE House

ORIGINATOR	P.R.W.	DATE	23 Nov 77
DWG. NO.	PL1001060		
SHEET	3	OF	REV - G

**AMPLIFIER
RESEARCH**

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APPROVED E.E.	DATE	APPROVED M.E.	DATE	ORIGINATOR	P.R.W.	DATE 23 Nov 77
TITLE HOUSING + INTERFACE ASSY				DWG. NO. PL1001060		
				SHEET 4	OF	REV F

			QUANTITY	DESCRIPTION	ITEM OR SYMBOL	PART NO.	VALUE	TOL	RATING	SPECIFICATION OR VENDOR
			25	CABLE, COAX (950)						
-	36"	-	24	RQ-210/U	CABLE, COAX					OUTPUT CABLE
-	-	- AR	23	RQ-142 B/U	CABLE, COAX					OUTPUT CABLE
1	1	1	22	1000249-101	NAMEPLATE					AR
4	4	4	21	1/4 HEX X 6-32 X 2 1/4	SPACER	(MTG J3, J4, J5)				
2	2	2	20	1/4 HEX X 6-32 X 3/4	SPACER	(PC BOARD SUPPORT)				
4	4	4	19	1/4 HEX X 6-32 X 5/8	SPACER	(MTG J1 + J2)				
6	6	6	18	1/4 HEX X 6-32 X 1/2	SPACER	(MTG PUR COMB LINER & TRANSFORMER)				
2	2	2	17	1/4 HEX X #6 X 1/2	SPACER	(PC BOARD SUPPORT)				
1	1	1	16	RB-67-1-SK-7-M	KNOB, SKIRTED	3" SHAFT				
2	2	1	15	RB-67-1-P-DC-M	KNOB, POINTER					ROGAN
1	1	1	14	1523	STRAIN RELIEF					GC
1	1	1	13	17419	LINE CORD					BELDEN
2	2	2	12	ED155B	HANDLE					UNICORP
4	4	-	4	11	2182	FOOT, CHASSIS				
2	2	2	10	65-175	GUARD, FINGER					H.H. SMITH
1	1	1	9	2005	TERMINAL STRIP					MC
-	-	-	-	8	1000832-111-1	PANEL, FRONT				CINCH-JONES
1	1	1	-	7	1000832-102-1	PANEL, REAR				AR
1	1	1	6	1001042-501	ATTENUATOR					AR
1	1	1	5	1000860-101	PLATE, MTG, Conn.					AR
2	2	2	4	1000832-301	PLATE, SIDE, INTERNAL					AR
1	1	1	3	1000832-105	PLATE, MTG, BOTTOM					AR
-	-	-	2	1000832-119-2	PANEL, REAR					AR
1	1	-	1	1000832-116-1	PANEL, FRONT					
509	508	507	506	505	504	503	502	501		
										QUANTITY REQUIRED

Amplifier Research

APPROVED E.E.	DATE M.E.	APPROVED DATE	ORIGINATOR P.R.W.,	DATE 23 Nov 77
TITLE INTERFACE + HOUSINGS ASSY				
OWG. NO. PL1001060				
SHEET 5 OF REV E				

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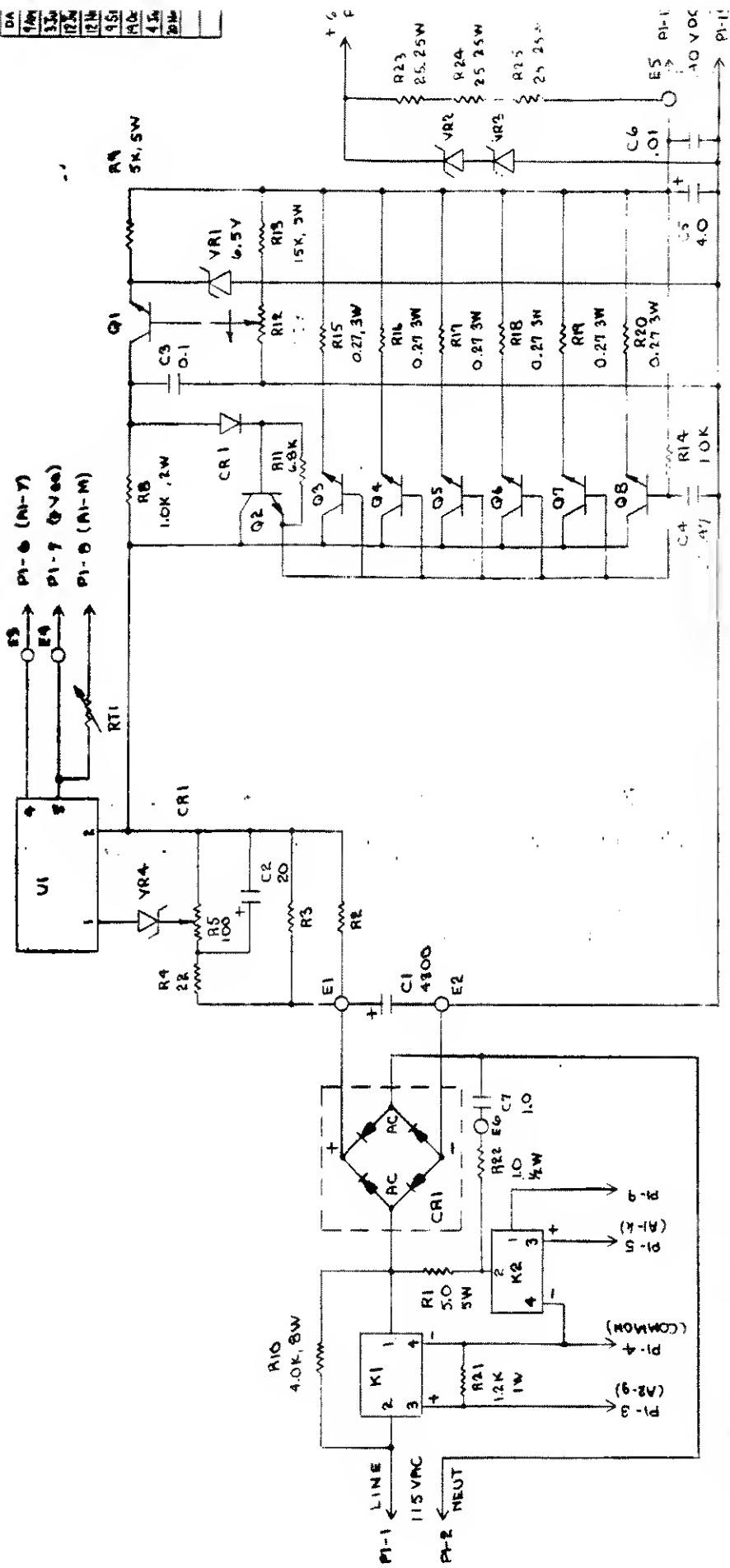
**AMPLIFIER
RESEARCH**

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OWG. NO. PL1001061
SHEET 1 OF 1 REV C

AMPLIFIER ASSY
MODEL 70-A SERIES

SECTION VI
SCHEMATICS



NOTE

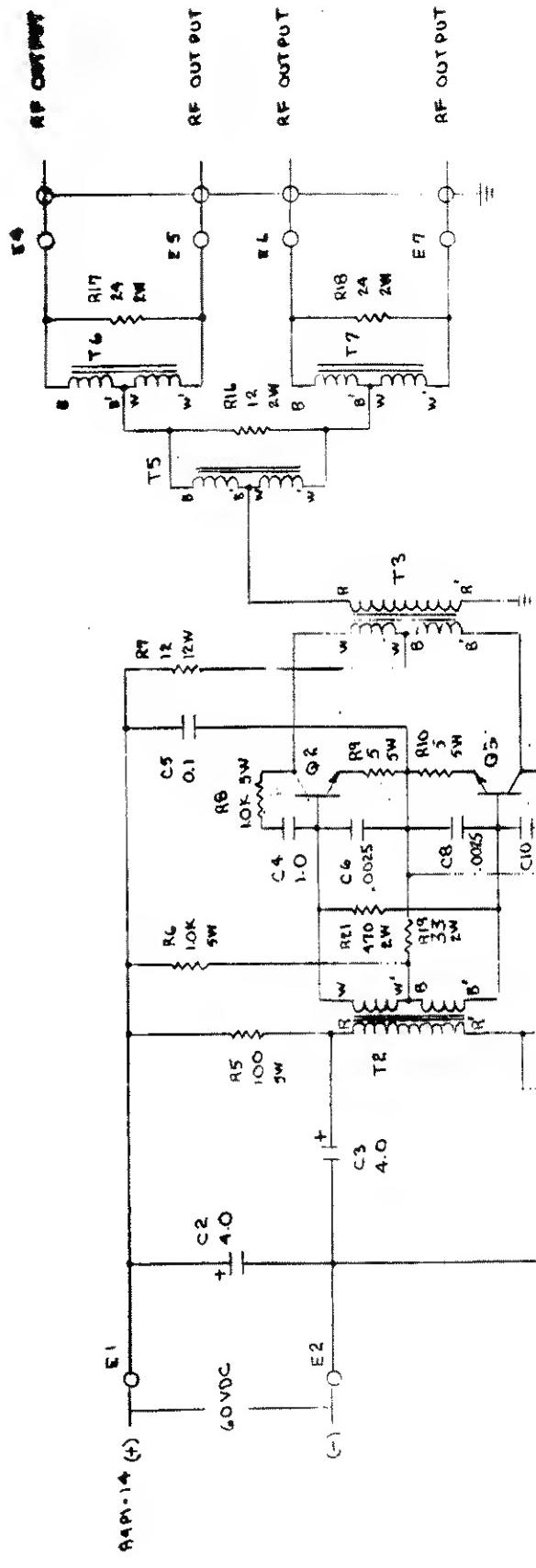
- 10 UNLESS OTHERWISE SPECIFIED:**
RESISTOR VALUES ARE OHM'S
RESISTOR RATINGS ARE $\frac{1}{4}$ W
CAPACITOR VALUES ARE MICROFARADS

11 THIS SCHEMATIC MAY REPRESENT HAL ASSEMBLIES. SEE APPROPRIATE PARTS FOR FINAL COMPONENT VALUES.

REFERENCE DESIGNATIONS
LAST USED C7-225 BG-BZ
NOT USED

QTY. R&P.		M		T		E		N		K		I		F		A		R & N		K	
UNLESS OTHERWISE SPECIFIED		DO NOT SCALE		DRAWING		DATE		3 MARS 76		CHRIS		DATE		MARCH		DATE		MARCH		DATE	
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS.		ALL THREADS ARE UNIFIED NATIONAL SEMI-FINE, CLASS 2.		REFLECT ALL SURFACES AND BURRS EDGED.		TOLERANCES ± .010.															
QTY. R&P.		M		T		E		N		K		I		F		A		R & N		K	
1		1		1		1		1		1		1		1		1		1		1	
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a Apn 9
 18 May 1
 1967
 0 Spec
 1 Drawing
 3 Revise
 10 Rev



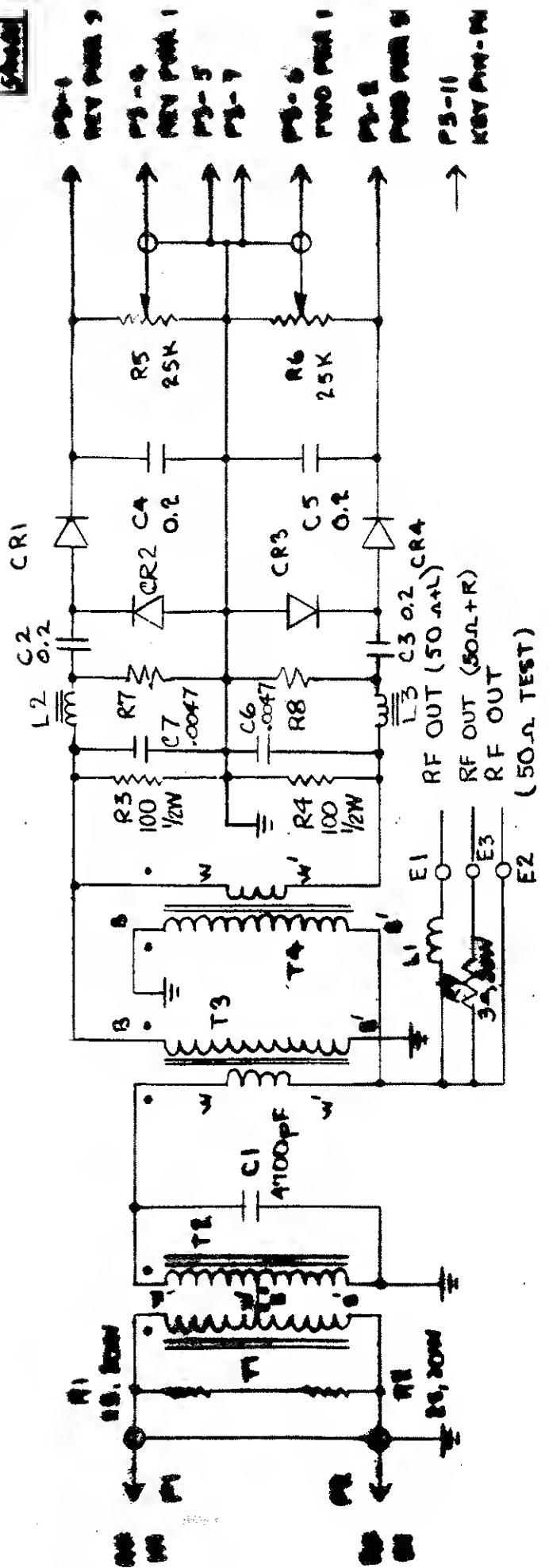
NOTES
 1.0 UNLESS OTHERWISE SPECIFIED
 1.1 CAPACITOR VALUES ARE SHOWN IN
 MICROFARADS
 1.2 RESISTOR VALUES ARE SHOWN IN OHMS
 1.3 RESISTOR RATINGS ARE 1/2 WATT
 △ 2.0 SEE APPROPRIATE PARTS LIST FOR
 COMPONENT VALUES

REFERENCE	DESIGNATIONS
LAST USED	NOT USED
C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13	
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20	
T1, T2, T3, T4	

UNLESS OTHERWISE
 SPECIFIED
 DO NOT SCALE
 DRAWING.
 DIMENSIONS ARE IN
 INCHES AND INCLUDE
 PLATING THICKNESS.
 ALL THREADS ARE
 UNPRED NATION,
 SERRATED, CLASS 2.
 REMOVE ALL BURRS
 AND SWEEP EDGES.
 TOLERANCES ± .005

AMPLIFIER	
TESTER	
SCHEMATIC DIAG	
LOW LEVEL AMP	
DRAW.	DATE
REVISION	10000837
SHEET	1
OF	1

DATE
12/20/12
5/1/13
5/1/13
5/1/13
5/1/13



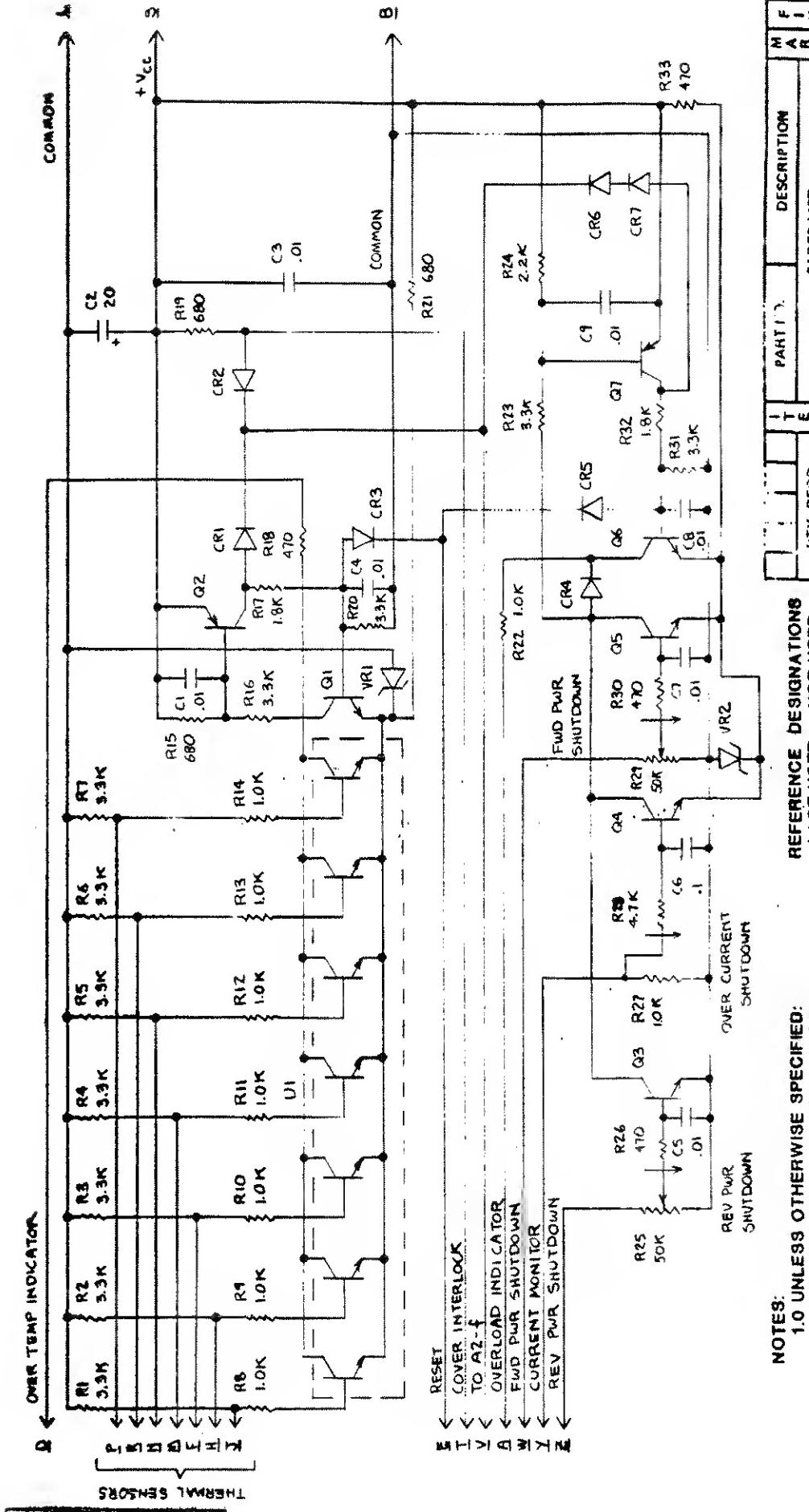
NOTE

- 1.0 UNLESS OTHERWISE SPECIFIED:
RESISTOR VALUES ARE OHMS
RESISTOR RATINGS ARE $\frac{1}{4}$ WATT
CAPACITOR VALUES ARE MICROFARADS
 - 2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE ASSEMBLIES. SEE APPROPRIATE PARTS LIST FOR FINAL COMPONENT VALUES.

REFERENCE DESIGNATIONS
LAST USED NOT USED

C7 P3
CR4 P9
E3 T4

SCHEMATIC DIAG.		FINAL COMB & DETEC	RF
		1000845	E
DWG. NO.			
DWG. NO.			
SCALE			
SCALE			
NONE		SHEET	



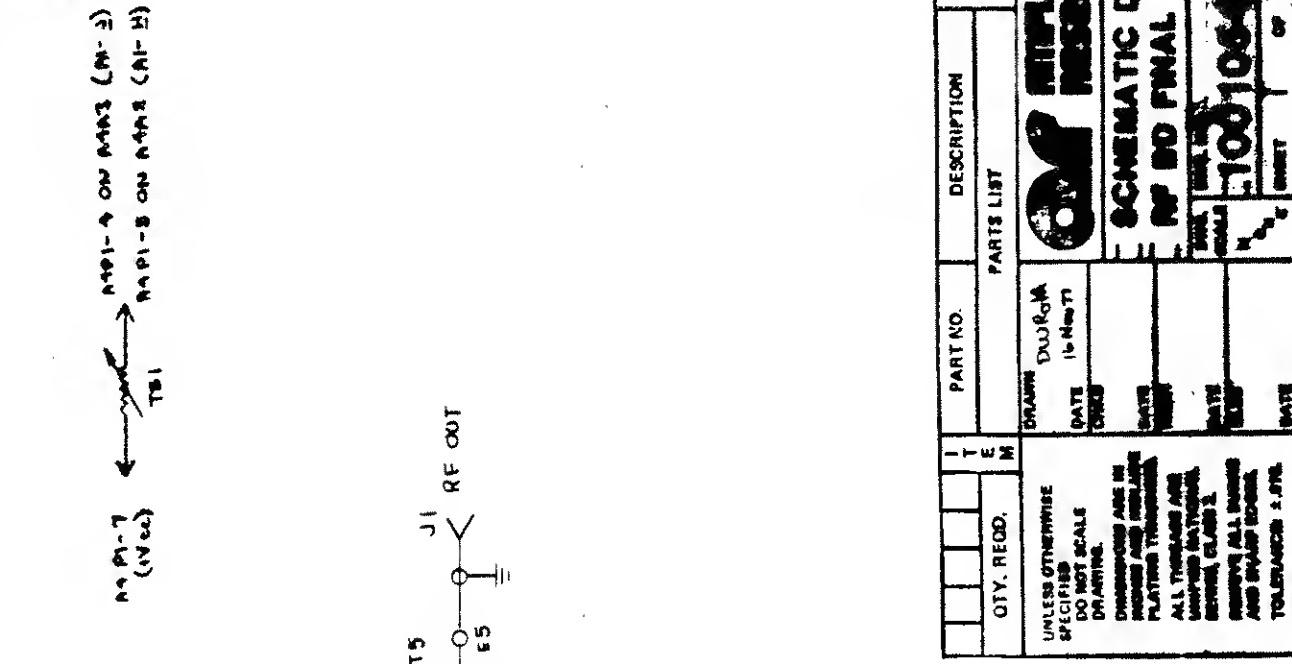
NOTES:

- 1.0 UNLESS OTHERWISE SPECIFIED:
RESISTOR VALUES ARE OHMS
RESISTOR RATINGS ARE 1/4W
CAPACITOR VALUES ARE MICROFARADS
- 2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE ASSEMBLIES. SEE APPROPRIATE PARTS LIST FOR FINAL COMPONENT VALUES.

REFERENCE DESIGNATION	LAST USED	NOT USED	DESCRIPTION	MATERIAL	F
C9, R23	Q4, U1, VR1	Q7	PART NO. 111-11111-11111	DRAWN BY P.R. WILSON DATE 15 Nov 77	N

REFERENCE DESIGNATION	LAST USED	NOT USED	DESCRIPTION	MATERIAL	F
			PARTS LIST	DRAWN BY P.R. WILSON DATE 15 Nov 77	N

SCHEMATIC DIAG	LOGIC A1	SCHEMATIC DIAG	LOGIC A1
100-1002	1	100-1002	1



NOTES:

- 1.0 UNLESS OTHERWISE SPECIFIED:
RESISTOR VALUES ARE OHMS
RESISTOR RATINGS ARE $\frac{1}{4}$ W
CAPACITOR VALUES ARE MICROFARADS
- 2.0 THIS SCHEMATIC MAY REPRESENT MULTIPLE ASSEMBLIES. SEE APPROPRIATE PARTS LIST FOR FINAL COMPONENT VALUES.

REFERENCE DESIGNATIONS
LAST USED
NOT USED
C1 R1
C2 T1
C3 C4
R2 T2
R3 R5
R4 R6
R5 R7
R6 R8
R7 R9
R8 R10
R9 R11
R10 R12
R11 R13
R12 R14
R13 R15
R14 R16
R15 R17
R16 R18
R17 R19
C4 C5
C5 C6
C6 C7
C7 C8
C8 C9
T1 T2
T2 T3
T3 T4
T4 T5
T5 T6

PART NO.		DESCRIPTION		QTY. REQ'D.		PARTS LIST		DRAWN BY		DATE	
UNLESS OTHERWISE SPECIFIED DO NOT SCALE DIMENSIONS ARE IN INCHES AND PLATING THICKNESS IN MILS ALL TERMINALS ARE SOLDERABLE EXCEPT WHERE SPECIFIED AS LEAD FREE AND SOLDER FREE											
C1	R1	16 MILS	T1	1	1	1	1	1	1	1	1
C2	T2										
C3	C4										
R2	R5										
R3	R6										
R4	R7										
R5	R8										
R6	R9										
R7	R10										
R8	R11										
R9	R12										
R10	R13										
R11	R14										
R12	R15										
R13	R16										
R14	R17										
R15	R18										
R16	R19										



WARRANTIES: LIMITATION OF LIABILITY

Seller warrants (i) that seller has title to the goods sold and (ii) that the goods will be free from defects in material and workmanship for a period of one year from date of shipment shown on Amplifier Research invoice. Seller's sole responsibility in fulfilling these warranties shall be to repair or replace any goods which do not conform to the foregoing warranties or, at seller's option, to give buyer credit for defective goods. Warranty service will be provided only for defective goods which are returned within the warranty period, freight costs prepaid, to Amplifier Research or its designated repair facility.

THERE ARE NO OTHER WARRANTIES,
EXPRESS OR IMPLIED, INCLUDING
ANY WARRANTY OF MERCHANTABILITY
OR FITNESS. SELLER SHALL NOT BE
RESPONSIBLE FOR ANY INCIDENTAL
OR CONSEQUENTIAL DAMAGES ARISING
FROM ANY BREACH OF WARRANTY.

No person other than an officer of Amplifier Research Corporation, has any authority to bind seller to any affirmation, representation or warranty except as specifically included in the preceding terms and conditions.

160 SCHOOL HOUSE ROAD
SOUDERTON, PA. 18964
PHONE 215-723-8181
TWX 510-661-6094

REV1D81



AMPLIFIER RESEARCH

MODEL NO. 700A
SERIAL NO. 4664
TESTED BY KH
DATE 2-29-84

TEST DATA SHEET

FREQ (KHz)	POWER OUTPUT: 100W RMS		POWER OUTPUT: 300W RMS	
	GAIN (dB)	DISTORTION (%)	GAIN (dB)	DISTORTION (%)
10	61.8	2.2	60.3	5.4
15	62.3	2.2	60.5	7.2
20	62.3	2.2	61.1	7.8
30	62.8	2.2	62.1	6.0
50	63.0	1.8	62.1	6.2
75	63.2	2.0	61.9	7.2
100	63.3	2.7	61.9	8.2
150	63.6	2.9	62.0	8.2
175	63.7	3.0	62.0	8.0
200	64.0	3.4	61.8	7.6
225	64.1	3.4	61.8	7.4
250	64.1	3.4	61.5	7.6

OPEN & SHORT TEST

OVERDRIVE SHUTDOWN 500 WATTS RMS

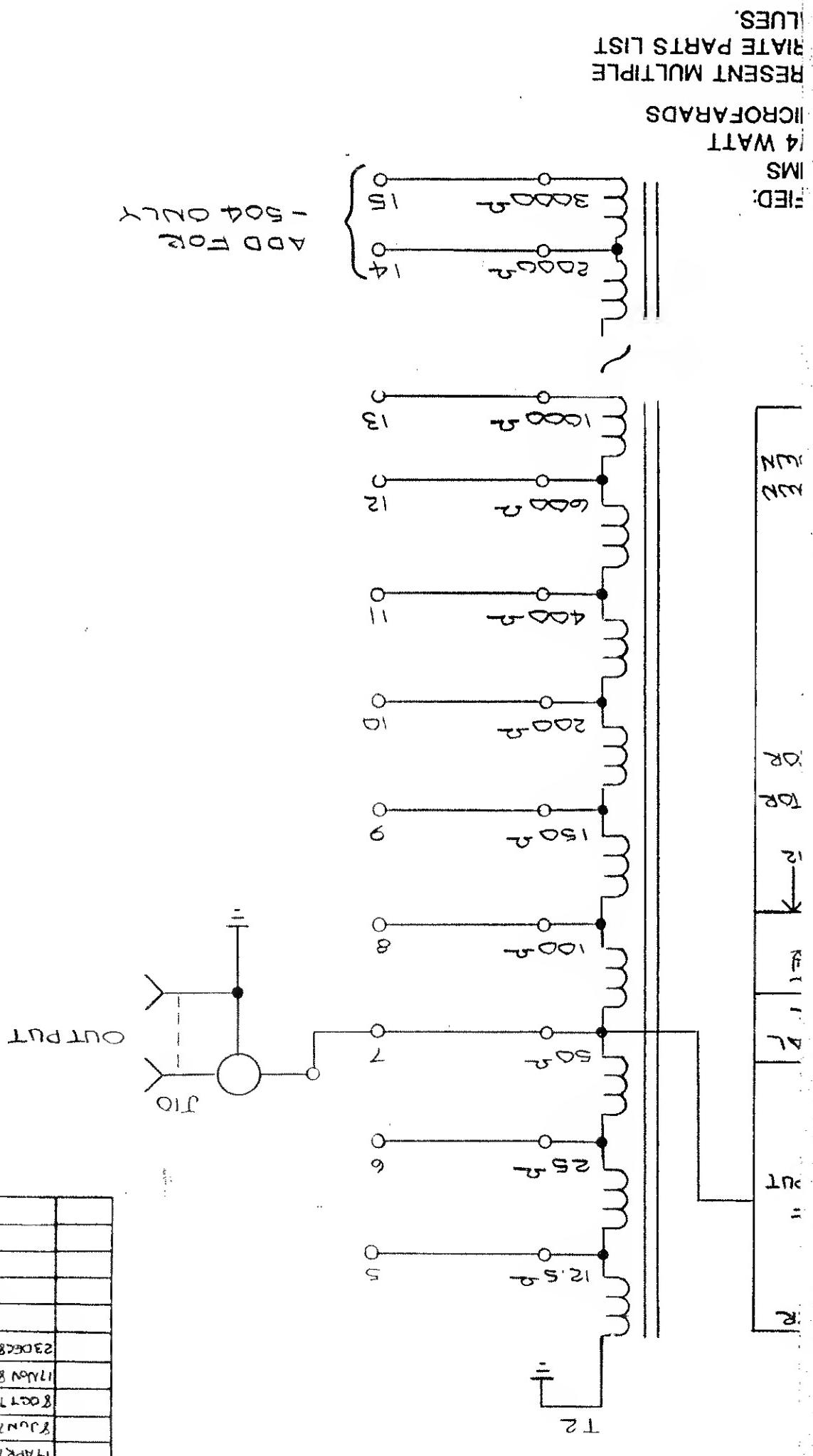
VSWR SHUTDOWN 200 WATTS RMS

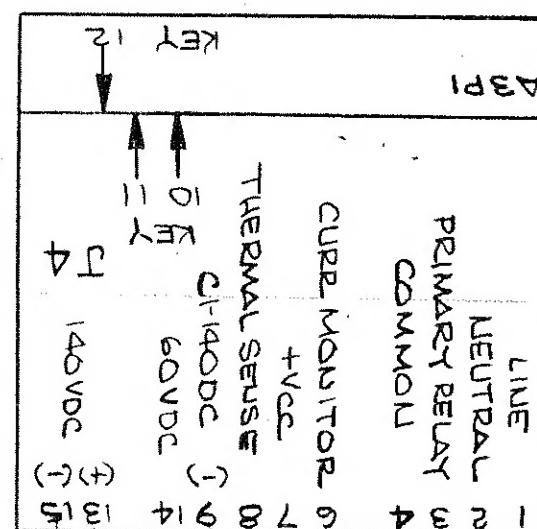
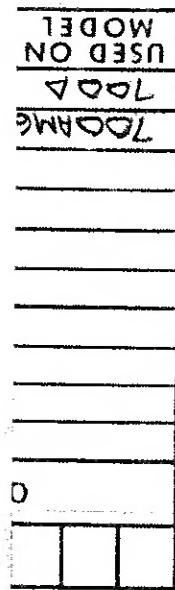
160 SCHOOL HOUSE ROAD
SOUDERTON, PA. 18964

PHONE: 215-723-8181

1001044

TY. REOD.	I	E	M	M A T L
PART NO.	DESCRIPTION	PARTS LIST	M A R K	F I N
DRAWN BY - DRAWMNG DATE 9 MARCH 89 CHKD J. NUGENBORG				
UNLESS OTHERWISE SPECIFIED DD NDT SCALE DRAWING				
DIMENSIDS ARE IN INCHES AND INCLUDE PLATING THICKNESS.				
ALL THREADS ARE UNFIELD NATIONAL SERIES, CLASS 2.				
REMVE ALL BURRS AND SHARP EDGES.				
TOLERANCE: ± .010.				
SHEET / / DF /	DATE	SCALE	ELEC	DWG. N.D.
E	1001059	f		REV.





REFERENCE DESIGNATIONS
LAST USED NOT USED
DS3, S3 DS4 TI
BS SE VR1
F1 M1
J10
NOTES:
1.0 UNLESS OTHERWISE SPECIFIED
RESISTOR VALUES ARE OH
CAPACITOR RATINGS ARE 1/
RESISTOR RATINGS ARE 1/
ASSEMBLIES. SEE APPROPRIATE
FOR FINAL COMPONENT VA

NOTES:
2.0 THIS SCHEMATIC MAY BEP
UNLESS OTHERWISE SPECIFIED
RESISTOR VALUES ARE OH
CAPACITOR RATINGS ARE 1/
RESISTOR RATINGS ARE 1/
ASSEMBLIES. SEE APPROPRIATE
FOR FINAL COMPONENT VA

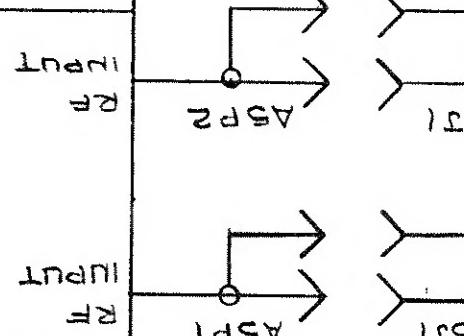
FWD PWR SHUT-OFF
REV PWR SHUT-OFF

J5

6 FWD PWR MON.
4 REV PWR MON.
2 A
5 S

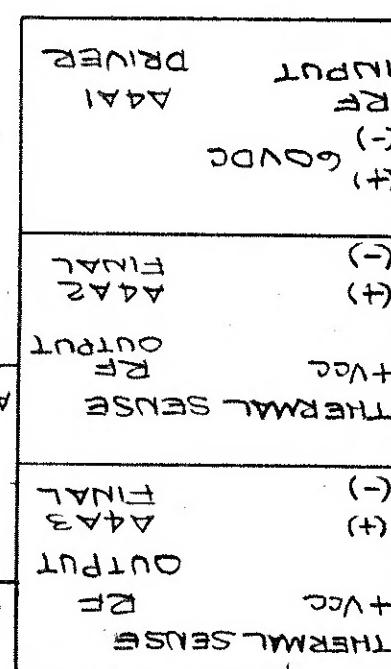
DIR ECT10N/
DETECTO R
DIR ECT10N/
A5P3

RF
OUTP U T



POWER COMBINE

A5



AMPLIFIER ASSY
A4

